

FIGURE 1

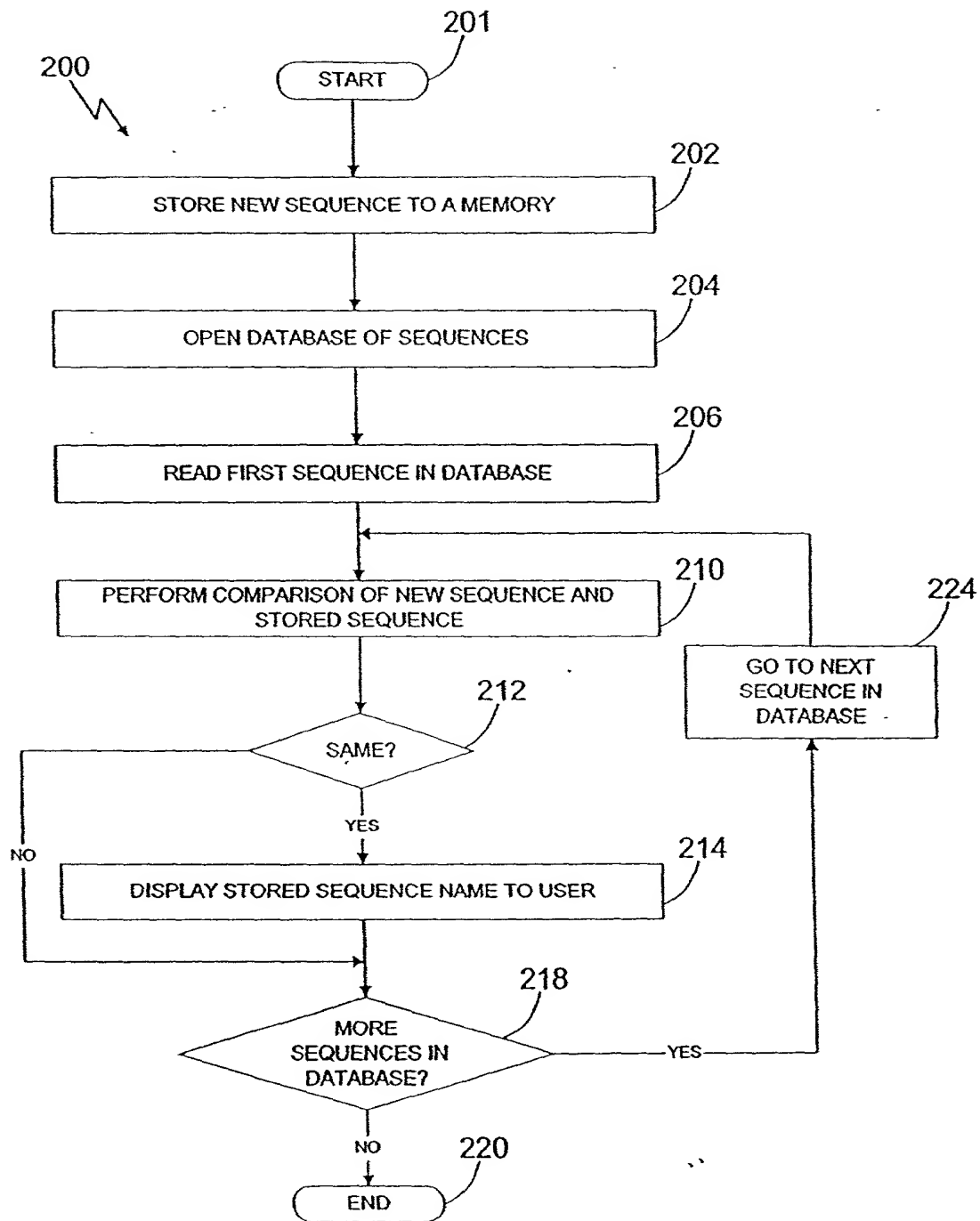


FIGURE 2

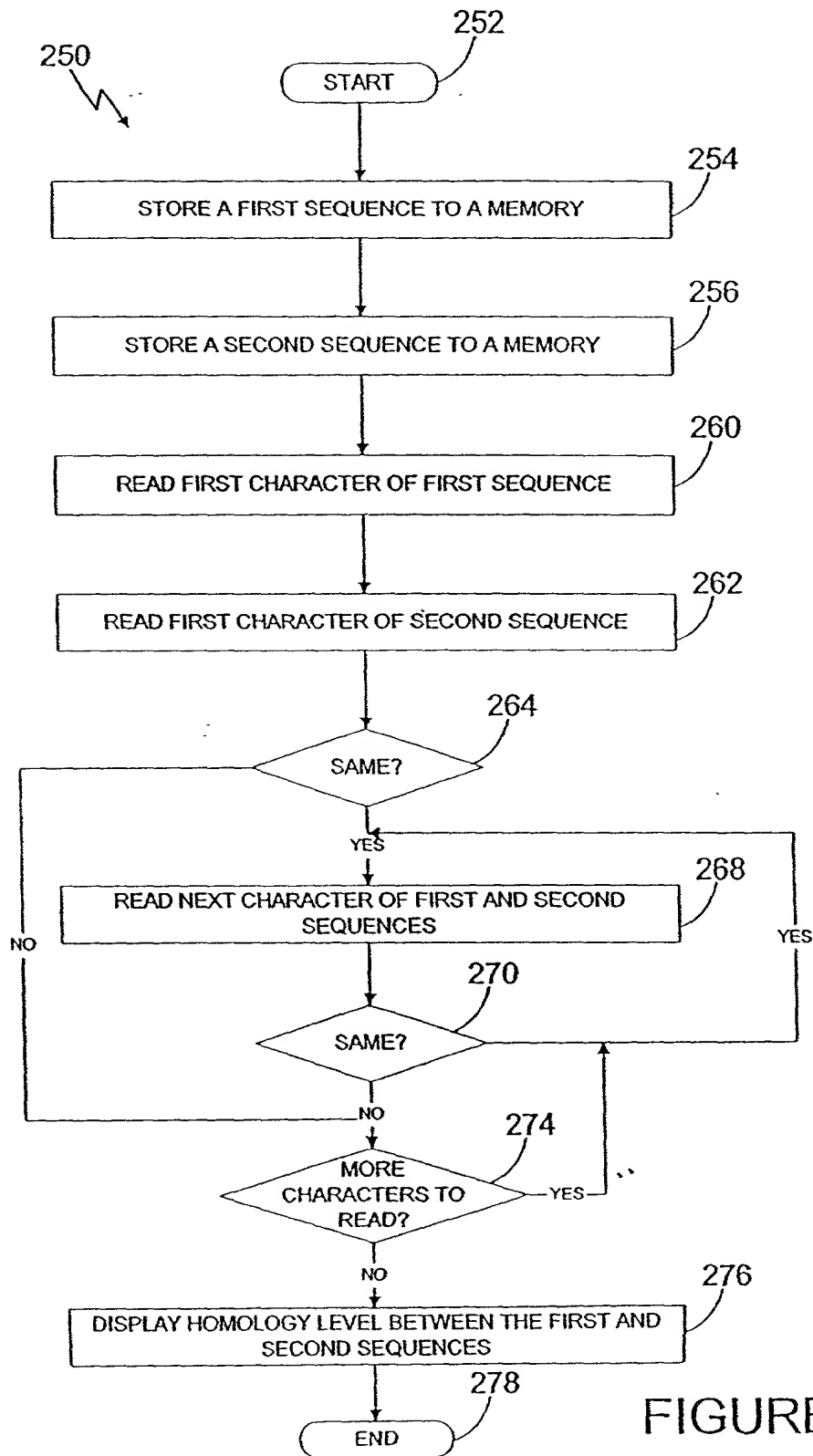


FIGURE 3

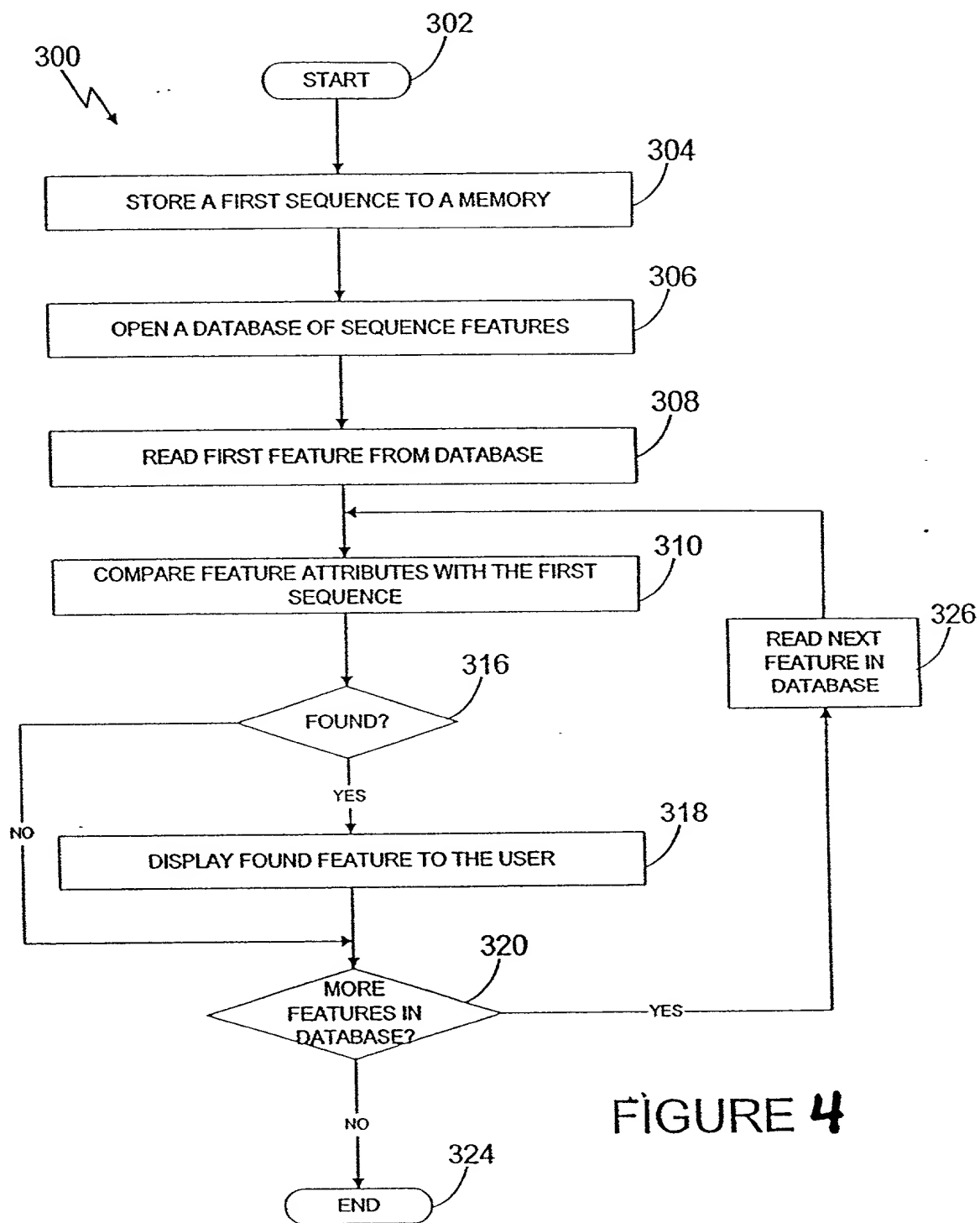


FIGURE 4

FIG. 5
Staphylothermus Marinus - F1-12LC

1	ATG TCT TTA AAC AAG CAC TCT TGG ATG CAT ATG ATA ATA TTT ATT CTC AGC TTT TCT TTC	60
1	Met Ser Leu Asn Lys His Ser Trp Met Asp Met Ile Ile Phe Ile Leu Ser Phe Ser Phe	20
6	61 CCA TTA ACA ATG ATC GCA TTA GCT ATC TCT ATG TCG TCA TGG TTT AAT ATA TGG AAT AAT	120
2	21 Pro Leu Thr Met Ile Ala Leu Ala Ile Ser Met Ser Ser Trp Phe Asn Ile Trp Asn Asn	40
12	121 GCA TTA AGC GAT CTA GGA CAT GCT GTT AAA AGC AGT GTT GCT CCA ATA TTC AAT CTA GGT	180
4	41 Ala Leu Ser Asp Leu Gly His Ala Val Lys Ser Ser Val Ala Pro Ile Phe Asn Leu Gly	60
18	181 CCT GCA ATT GGT GGG ATA CTA ATT GTT ATA GGT TTA AGA AAT CTT TAT TCG TGG AGT	240
6	61 Leu Ala Ile Gly Ile Leu Ile Val Ile Val Gly Leu Arg Asn Leu Tyr Ser Trp Ser	80
24	241 AGA GTT AAA GGA TCT TTA ATC ATA TCC ATG GGT GTA TTT CTT AAC TTA ATA GGG GTT TTC	300
8	81 Arg Val Lys Gly Ser Leu Ile Ile Ser Met Gly Val Phe Leu Asn Leu Ile Gly Val Phe	100
30	301 GAC GAA GTA TAT GGT TGG ATA CAT TTC CTA GTC TCA GTA TTG TTT TTC TTA TCA ATA ATA	360
10	101 Asp Glu Val Tyr Gly Trp Ile His Phe Leu Val Ser Val Leu Phe Phe Leu Ser Ile Ile	120
36	361 GCA TAT TTC ATA GCT ATA TCA ATA CTT GAC AAA TCA TGG ATA GCT GTT CTA CTA ATA ATA	420
12	121 Ala Tyr Phe Ile Ala Ile Ser Ile Leu Asp Lys Ser Trp Ile Ala Val Leu Leu Ile Ile	140
42	421 GGT CAT ATT GCA ATG TGG TAT CTA CAC TTT GCT TCA GAG ATT CCG AGA GGT GCG GCT ATT	480
14	141 Gly His Ile Ala Met Trp Tyr Leu His Phe Ala Ser Glu Ile Pro Arg Gly Ala Ala Ile	160
48	481 CCC GAG TTA TTA GCG GTA TTC TCG TTT TTA CCA TTC TAT ATA AGA GAC TAT TTT AAA TCA	540
16	161 Pro Glu Leu Leu Ala Val Phe Ser Phe Leu Pro Phe Tyr Ile Arg Asp Tyr Phe Lys Ser	180
54	541 TAC ACT AAA CGA TAG	555
18	181 Tyr Thr Lys Arg End	185

FIG. 6A
***Pyrodicticum* - TAG11-17LC**

FIG. 6B

601	GTG GGG TTC AGT ATG GGC GGC GCT GTA CGC ATC GTG GAG CGT GCT GGG GAC CCG CGG GTC	660
201	Val Gly Phe Ser Met Gly Gly Ala Val Ala Ile Val Glu Gly Ala Gly Asp Pro Arg Val	220
661	TAC GCG GTG GCT GAT AGC CCG TAC TAT AGG CTC CCG GAC GTC ATA CCC CCG TGG CTG	720
221	Tyr Ala Val Ala Ala Asp Ser Pro Tyr Tyr Arg Leu Arg Asp Val Ile Pro Arg Trp Leu	240
721	GAG TAC AAG ACG CCG CTG CCG GGC TGG GTG GGT GTG CTC GCC GGG TTC TAC GGG AGG CTG	780
241	Glu Tyr Lys Thr Pro Leu Pro Gly Trp Val Gly Val Leu Ala Gly Phe Tyr Gly Arg Leu	260
781	ATG GCG GGC GTT GAC CTC GGC TTC GGC CCC GCT GGG GTG GAG CGC GTG GAT AAG CCG TTG	840
261	Met Ala Gly Val Asp Leu Gly Phe Gly Pro Ala Gly Val Glu Arg Val Asp Lys Pro Leu	280
841	CTG GTG GTG TAT GGG CCC CCG GAC CCG CTG GTG ACG CCG GAC GAG CGC AGG AGC CTG GCG	900
281	Leu Val Val Tyr Gly Pro Arg Asp Pro Leu Val Thr Arg Asp Glu Ala Arg Ser Leu Ala	300
901	TCC CGT AGC CCG TGT GGC CGT CTC GTC GAG GTT CCT GGG GCT GGC CAC GTG GAG GCC GTG	960
301	Ser Arg Ser Pro Cys Gly Arg Leu Val Glu Val Pro Gly Ala Gly His Val Glu Ala Val	320
961	GAT GTG CTC GGG CCG GGC CGC TAC GCA GAC ATG CTG ATA GAG CTG CCG CAC GAG GAG TGC	1020
321	Asp Val Leu Gly Pro Gly Arg Tyr Ala Asp Met Leu Ile Glu Leu Ala His Glu Glu Cys	340
1021	CCT CCG GGG GCC GGT GGC TGA	1041
341	Pro Pro Gly Ala Gly Gly End	347

FIG. 7A

Archaeoglobus Veneticus SN P6-24LC

1 ATGCCA TAT GTT AGG AAT GGT GGT GTA AAT ATC TAT TAT GAA CTG GTG GAT GGA CCT GAG 60
 1 Met Pro Tyr Val Arg Asn Gly Gly Val Asn Ile Tyr Tyr Glu Leu Val Asp Gly Pro Glu 20
 61 CCA CCA ATT GTC TTT GTT CAC GGA TGG ACA GCA AAT ATG AAT TTT TGG AAA GAG CAA AGA 120
 21 Pro Pro Ile Val Phe Val His Gly Trp Thr Ala Asn Met Asn Phe Trp Lys Glu Gln Arg 40
 121 CGT TAT TTT GCA GGC AGG AAT ATG ATG TTG TTT GTC GAT AAC AGA GGT CAG GGC AGG TCC 180
 41 Arg Tyr Phe Ala Gly Arg Asn Met Met Leu Phe Val Asp Asn Arg Gly His Gly Arg Ser 60
 181 GAT AAG CCA CTT GGA TAC GAT TTC TAC AGA TTT GAG AAC TTC ATT TCA GAT TTA GAT GCG 240
 61 Asp Lys Pro Leu Gly Tyr Asp Phe Tyr Arg Phe Glu Asn Phe Ile Ser Asp Leu Asp Ala 80
 241 GTT GTT AGG GAG ACT GGA GTG GAG AAA TTT GTT CTC GTC GGA CAT TCA TTC GGA ACA ATG 300
 81 Val Val Arg Glu Thr Gly Val Glu Lys Phe Val Leu Val Gly His Ser Phe Gly Thr Met 100
 301 ATC TCT ATG AAG TAC TGT TCG GAG TAT CCG AAT CCG GTT CTT GCT CTA ATC CTC ATA GGT 360
 101 Ile Ser Met Lys Tyr Cys Ser Glu Tyr Arg Asn Arg Val Leu Ala Leu Ile Leu Ile Gly 120
 361 GGT GGC AGC AGA ATA AAG CTT CTA CAC AGA ATT GGA TAT CCT TTA GCA AAG ATT CTT GCA 420
 121 Gly Gly Ser Arg Ile Lys Leu Lys Leu His Arg Ile Gly Tyr Pro Leu Ala Lys Ile Leu Ala 140
 421 TCC ATT GCA TAC AAG AAG TCT TCA AGA TTG GTC GCA GAT CTT TCC TTT GGC AAA AAT GCT 480
 141 Ser Ile Ala Tyr Lys Lys Ser Ser Arg Leu Val Ala Asp Leu Ser Phe Gly Lys Asn Ala 160
 481 GGT GAA CTT AAA GAG TGG GGA TGG AAA CAG GCA ATG GAT TAT ACA CCC TCC TAC GTG GCA 540
 161 Gly Glu Leu Lys Glu Trp Gly Trp Lys Lys Gln Ala Met Asp Tyr Thr Pro Ser Tyr Val Ala 160
 541 ATG TAC ACG TAC AGA ACT CTA ACG AAA GTG AAT CTT GAA AAT ATC TTG GAG AAA ATA GAC 600
 181 Met Tyr Thr Tyr Arg Thr Leu Thr Lys Val Asn Leu Glu Asn Ile Leu Glu Lys Ile Asp 200
 601 TGT CCA ACA CTG ATT ATC GTT GGA GAA GAG GAT GCA CTA TTG CCC GTT AGC AAA TCA GTT 660
 201 Cys Pro Thr Leu Ile Ile Val Gly Glu Glu Asp Ala Leu Leu Pro Val Ser Lys Ser Val 220

661 GAG CTG ACG AGG AGG ATA GAA AAC TCA AAG CTT GTG ATC ATC CCA AAC TCG GGG CAT TGC 720
221 Glu Leu Ser Arg Arg Ile Glu Asn Ser Lys Leu Val Ile Ile Pro Asn Ser Gly His Cys 240

721 GTA ATG CTT GAG AGT CCA AGT GAG GTT AAT AGA GCA ATG GAC GAA TTC ATT TCT TCA GCA 780
241 Val Met Leu Glu Ser Pro Ser Glu Val Asn Arg Ala Met Asp Glu Phe Ile Ser Ser Ala 260

781 CAG TTC TAA 789
261 Gln Phe End 263

FIG. 8
***Aquifax pyrophilus* - 28LC**

1 TTGAGA TTGAGG AAA TTT GAA GAG ATA AAC CTC GTT CTT TCG GGA GGA GCT GCA AAG GGC 60
 1 Leu Arg Leu Arg Lys Phe Glu Glu Ile Asn Leu Val Leu Ser Gly Gly Ala Ala Lys Gly 20
 61 ATA GCC CAC ATA GGT GTT TTG AAA GCT ATA AAC GAG CTC GGT ATA AGG GTG AGG GCT TTA 120
 21 Ile Ala His Ile Gly Val Leu Lys Ala Ile Asn Glu Leu Gly Ile Arg Val Arg Ala Leu 40
 121 AGC GGG GTG AGC GCC GGG GCA ATC GTT TCG GTC TTT TAT GCC TCA GGC TAC TCC CCT GAA 180
 41 Ser Gly Val Ser Ala Gly Ala Ile Val Ser Val Phe Tyr Ala Ser Gly Tyr Ser Pro Glu 60
 181 GGG ATG TTC AGC CTT CTG AAG AGG GTA AAC TGG CTG AAG CTG TTT AAG TTC AAG CCA CCT 240
 61 Gly Met Phe Ser Leu Leu Lys Arg Val Asn Trp Leu Lys Leu Phe Lys Phe Lys Pro Pro 80
 241 CTG AAG CGA TTG ATA GGG TGG GAG AAG GCT ATA AGA TTC CTT GAG GAA GTT CTC CCT TAC 300
 81 Leu Lys Gly Leu Ile Gly Trp Glu Lys Ala Ile Arg Phe Leu Glu Glu Val Leu Pro Tyr 100
 301 AGG AGA ATA GAA AAA CTT GAG ATA CCG ACG TAT ATA TGC GCG ACG GAT TTA TAC TCG CGA 360
 101 Arg Arg Ile Glu Lys Leu Glu Ile Pro Thr Tyr Ile Cys Ala Thr Asp Leu Tyr Ser Gly 120
 361 AGG GCT CTA TAC CTC TCG GAA GGG AGT TTA ATC CCC GCA CTT CTC GGC AGC TGT GCA ATT 420
 121 Arg Ala Leu Tyr Leu Ser Glu Gly Ser Leu Ile Pro Ala Leu Leu Gly Ser Cys Ala Ile 140
 421 CCC GGC ATA TTT GAA CCC GTT GAG TAT AAG AAT TAC TTG CTC GTT GAC GGA GGT ATA GTT 480
 141 Pro Gly Ile Phe Glu Pro Val Gly Tyr Lys Asn Tyr Leu Leu Val Asp Gly Gly Ile Val 160
 481 AAC AAC CTT CCC GTT GAG CCC TTT CAG GAA AGC GGT ATT CCC ACC GTT TGC GTT GAT GTC 540
 161 Asn Asn Leu Pro Val Glu Pro Phe Glu Ser Gly Ile Pro Thr Val Cys Val Asp Val 180
 541 CTT CCC ATA GAG CCG GAA AAG GAT ATA AAG AAC ATT CTT CAC ATC CTT TTG AGG AGC TTC 600
 181 Leu Pro Ile Glu Pro Glu Lys Asp Ile Lys Asn Ile Leu His Ile Leu Leu Arg Ser Phe 200
 601 TTT CTT GCG GTC CGC TCA AAC TCC GAA AAG AGA AAG GAG TTT TGT GAC CTC GTT ATA GTT 660
 201 Phe Leu Ala Val Arg Ser Asn Ser Glu Lys Arg Lys Glu Phe Cys Asp Leu Val Ile Val 220
 661 CCT GAG CTT GAG GAG TTC ACA CCC CTT GAT GTT AGA AAA GCG GAC CAA ATA ATG GAG AGG 720
 221 Pro Glu Leu Glu Glu Phe Thr Pro Leu Asp Val Arg Lys Ala Asp Gln Ile Met Glu Arg 240
 721 GGA TAC ATA AAG GCC TTA GAG GTA CTT TCT GAA TAG 756
 241 Gly Tyr Ile Lys Ala Leu Glu Val Leu Ser Glu End 252

FIG. 9A
M11TL-29L

1 ATG TTT AAT ATC AAT GTC TTT GTT AAT ATA TCT TGG CTG TAT TTT TCA GGG ATA GTT ATG 60
1 Met Phe Asn Ile Asn Val Phe Val Asn Ile Ser Trp Leu Tyr Phe Ser Gly Ile Val Met 20

61 AAG ACT GTG GAA GAG TAT GCG CTA CTT GAA ACA GGC GTA AGA GTG TTT TAT CCG TGT GTA 120
21 Lys Thr Val Glu Glu Tyr Ala Leu Leu Glu Thr Gly Val Arg Val Phe Tyr Arg Cys Val 40

121 ATC CCG GAG AAA GCT TTT AAC ACT TTG ATA ATA GGT TCA CAC GGA TTG GGG GCG CAC AGT 180
41 Ile Pro Glu Lys Ala Phe Asn Thr Leu Ile Ile Gly Ser His Gly Leu Gly Ala His Ser 60

181 GGA ATC TAC ATT AGT GTT GCT GAA GAA TTT GCT AGG CAC GGA TTT GGA TTC TGC ATG CAC 240
61 Gly Ile Tyr Ile Ser Val Ala Glu Glu Phe Ala Arg His Gly Phe Gly Phe Cys Met His 80

241 GAT CAA AGG GGA CAT GGG AGA ACG GCA AGC GAT AGA GAA AGA GGG TAT GTG GAG GGC TTT 300
81 Asp Gln Arg Gly His Gly Arg Thr Ala Ser Asp Arg Glu Arg Gly Tyr Val Glu Gly Phe 100

301 CAC AAC TTC ATA GAG GAT ATG AAG GCC TTC TCC GAT TAT GCC AAG TGG CGC GTG GGA GGT 360
101 His Asn Phe Ile Glu Asp Met Lys Ala Phe Ser Asp Tyr Ala Lys Trp Arg Val Gly Gly 120

361 GAC GAA ATA ATA TTG CTA GGA CAC AGT ATG GGC GGG CTG ATA GCG CTC TTA ACA GTT GCA 420
121 Asp Glu Ile Ile Leu Leu Gly His Ser Met Gly Gly Leu Ile Ala Leu Leu Thr Val Ala 140

421 ACT TAT AAA GAA ATC GCC AAG GGA GTT ATC GCG CTA GCC CCG GCC CTC CAA ATC CCC TTA 480
141 Thr Tyr Lys Lys Glu Ile Ala Lys Gly Val Ile Ala Leu Ala Pro Ala Leu Gln Ile Pro Leu 160

481 ACC CCG GCT AGA AGA CTT GTT CTA AGC CTC GCG TCA AGG CTT GCC CCG CAT TCT AAG ATC 540
161 Thr Leu Gln Arg Arg Leu Val Leu Ser Leu Ala Ser Arg Leu Ala Pro His Ser Lys Ile 180

541 ACC TTA CAA AGG AGA TTG CCG CAG AAA CCA GAG GGT TTT CAA AGA GCA AAA GAT ATA GAA 600
181 Thr Leu Gln Arg Arg Leu Pro Gly Lys Pro Gly Lys Phe Gln Arg Ala Lys Asp Ile Glu 200

601 TAC AGT CTG AGT GAA ATA TCA GTC AAG CTC GTG GAC GAA ATG ATT AAA GCA TCA TCT ATG 660
201 Tyr Ser Leu Ser Glu Ile Ser Val Lys Leu Val Asp Glu Met Ile Lys Ala Ser Ser Met 220

661 TTG TGG ACC ATA GCA GGG GAA ATT AAT ACT CCC GTC CTG CTT ATT CAT GGG GAA AAA GAC 720
221 Phe Trp Thr Ile Ala Gly Glu Ile Asn Thr Pro Val Leu Leu Ile Lys Ala Ser Ser Met 240

FIG. 7 B
M117L-29L.

721	AAT GTC ATA CCT CCG GAG GCG AGC AAA AAA GCC TAC CAA TTA ATA CCT TCA TTC CCT AAA	780
241	Asn Val Ile Pro Pro Glu Ala Ser Lys Lys Ala Tyr Gln Leu Ile Pro Ser Phe Pro Lys	
781	GAG TTG AAA ATA TAC CCC GAT CTT GGA CAC AAC TTG TTT TTT GAA CCA GGC GCG GTG AAA	840
261	Glu Leu Lys Ile Tyr Pro Asp Leu Gly His Asn Leu Phe Phe Glu Pro Gly Ala Val Lys	280
841	ATC GTC ACA GAC ATT GTA GAG TGG GTT AAG AAT CTA CCC AGG GAA AAT CCT TAA	894
281	Ile Val Thr Asp Ile Val Glu Trp Val Lys Asn Leu Pro Arg Glu Asn Pro End	298

Thermococcus CL-2-30LC

1	ATG	GAG	GTT	TAC	AAG	GCC	AAA	TTC	GGC	GAA	GCA	AAG	CTC	GGC	TGG	GTC	GTT	CTG	GTT	CAT	60
1	Met	Glu	Val	Tyr	Lys	Ala	Lys	Phe	Gly	Glu	Ala	Lys	Leu	Gly	Trp	Val	Val	Leu	Val	His	20
61	GGC	CTC	GGC	GAG	CAC	AGC	GGA	AGG	TAT	GGA	AGA	CTG	ATT	AAG	GAA	CTC	AAC	TAT	GCC	GGC	120
21	Gly	Leu	Gly	Glu	His	Ser	Gly	Arg	Tyr	Gly	Arg	Leu	Ile	Lys	Glu	Leu	Asn	Tyr	Ala	Gly	40
121	TTT	GGA	GTT	TAC	ACC	TTC	GAC	TGG	CCC	GGC	CAC	GGG	AAG	AGC	CCG	GGC	AAG	AGA	GGG	CAC	180
41	Phe	Gly	Val	Tyr	Thr	Phe	Asp	Trp	Pro	Gly	His	Gly	Lys	Ser	Pro	Gly	Lys	Arg	Gly	His	60
181	ACG	AGC	GTC	GAG	GAG	GCG	ATG	GAA	ATC	ATC	GAC	TCG	ATA	ATC	GAG	GAG	ATC	AGG	GAG	AAG	240
61	Thr	Ser	Val	Glu	Glu	Ala	Met	Glu	Ile	Ile	Asp	Ser	Ile	Ile	Glu	Glu	Ile	Arg	Glu	Lys	80
241	CCC	TTC	CTC	TTC	GGC	CAC	AGC	CTC	GGT	GGT	CTA	ACT	GTC	ATC	AGG	TAC	GCT	GAG	ACG	CGG	300
81	Pro	Phe	Leu	Phe	Gly	His	Ser	Leu	Gly	Gly	Leu	Thr	Val	Ile	Arg	Tyr	Ala	Glu	Thr	Arg	100
301	CCC	GAT	AAA	ATA	CGG	GGA	TTA	ATA	GCT	TCC	TCG	CCT	GCC	CTC	GCC	AAG	AGC	CCG	GAA	ACG	360
101	Pro	Asp	Lys	Ile	Arg	Gly	Leu	Ile	Ala	Ser	Ser	Pro	Ala	Leu	Ala	Lys	Ser	Pro	Glu	Thr	120
361	CCG	GGC	TTC	ATG	GTG	GCC	CTC	GCG	AAG	TTC	CTT	GGA	AAG	ATC	GCC	CCG	GGA	GTT	GTT	CTC	420
121	Pro	Gly	Phe	Met	Val	Ala	Leu	Ala	Lys	Phe	Leu	Gly	Lys	Ile	Ala	Pro	Gly	Val	Val	Leu	140
421	TCC	AAC	GGC	ATA	AAG	CCG	GAA	CTC	CTC	TCG	AGG	AAC	AGG	GAC	GCC	GTG	AGG	AGG	TAC	GTT	480
141	Ser	Asn	Gly	Ile	Lys	Pro	Glu	Leu	Leu	Ser	Arg	Asn	Arg	Asp	Ala	Val	Arg	Arg	Tyr	Val	160
481	GAA	GAC	CCA	CTC	GTC	CAC	GAC	AGG	ATT	TCG	GCC	AAG	CTG	GGA	AGG	AGC	ATC	TTC	GTG	AAC	540
161	Glu	Asp	Pro	Leu	Val	His	Asp	Arg	Ile	Ser	Ala	Lys	Leu	Gly	Arg	Ser	Ile	Phe	Val	Asn	180
541	ATG	GAG	CTG	GCC	CAC	AGG	GAG	GCG	GAC	AAG	ATA	AAA	GTC	CCG	ATC	CTC	CTT	CTG	ATG	GGC	600
181	Met	Glu	Leu	Ala	His	Arg	Glu	Glu	Ala	Asp	Lys	Ile	Lys	Val	Pro	Ile	Leu	Leu	Ile	Gly	200
601	ACT	GGC	GAT	GTA	ATA	ACC	CCG	CCT	GAA	GGC	TCA	CGC	AGA	CTC	TTC	GAG	GAG	CTG	GCC	GTC	660
201	Thr	Gly	Asp	Val	Ile	Thr	Pro	Pro	Glu	Gly	Ser	Arg	Arg	Leu	Phe	Glu	Glu	Leu	Ala	Val	220
661	GAG	AAC	AAA	ACC	CTG	AGG	GAG	TTC	GAG	GGG	CCG	TAC	CAC	GAG	ATA	TTT	GAA	GAC	CCC	GAG	720
221	Glu	Asn	Lys	Thr	Leu	Arg	Glu	Phe	Glu	Gly	Ala	Tyr	His	Glu	Ile	Phe	Glu	Asp	Pro	Glu	240

FIG. 10B
Thermococcus CL-2-30LC

721 TGG GCC GAG GAG TTC CAC GAA ACA ATT GTT AAG TGG CTG GTT GAA AAA TCG TAC TCT TCG 780
241 Trp Ala Glu Glu Phe His Glu Thr Ile Val Lys Trp Leu Val Glu Lys Ser Tyr Ser Ser 260
781 GCT CAA TAA 789
261 Ala Gln End 263

FIG. 1
Aquifex VF5-34LC

1 TTG ATT GGC AAT TTG AAA TTG AAG AGG TTT GAA GAG GTT AAC TTA GTT CTT TCG GGA GGG 60
1 Leu Ile Gly Asn Leu Lys Leu Lys Arg Phe Glu Glu Val Asn Leu Val Leu Ser Gly Gly 20
61 GCT GCC AAG GGT ATC GCC CAT ATA GGT GTT TTA AAA GCT CTG GAA GAG CTC GGT ATA AAG 120
21 Ala Ala Lys Gly Ile Ala His Ile Gly Val Leu Lys Ala Leu Glu Glu Leu Gly Ile Lys 40
121 GTA AAG AGG CTC AGC GGG GTA AGT GCT GGA GCT ATC GTT TCC GTC TTT TAC GCT TCG GGC 180
41 Val Lys Arg Leu Ser Gly Val Ser Ala Gly Ala Ile Val Ser Val Phe Tyr Ala Ser Gly 60
181 TAC ACT CCC GAC GAG ATG TTA AAA CTC CTG AAA GAG GTA AAC TGG CTC AAA CTT TTT AAG 240
61 Tyr Thr Pro Asp Glu Met Leu Lys Leu Lys Glu Val Asn Trp Leu Lys Leu Phe Lys 80
241 TTC AAA ACA CCG AAA ATG GGC TTA ATG GGG TGG GAG AAG GCT GCA GAG TTT TTG GAA AAA 300
81 Phe Lys Thr Pro Lys Met Gly Leu Met Gly Trp Glu Lys Ala Glu Phe Leu Glu Lys 100
301 GAG CTC GGA GTT AAG AGG CTG GAA GAC CTG AAC ATA CCA ACC TAT CTT TGC TCG GCG GAT 360
101 Glu Leu Gly Val Lys Arg Leu Glu Asp Leu Asn Ile Pro Thr Tyr Leu Cys Ser Ala Asp 120
361 CTG TAC ACG GGA AAG GCT CTT TAC TTC GGC AGA GGT GAC TTA ATT CCC GTG CTT CTC GGA 420
121 Leu Tyr Thr Gly Lys Ala Leu Tyr Phe Gly Arg Gly Asp Leu Ile Pro Val Leu Leu Gly 140
421 AGT TGT TCC ATA CCC GGG ATT TTT GAA CCA GTT GAG TAC GAG AAT TTT CTA CTT GTT GAC 480
141 Ser Cys Ser Ile Pro Gly Ile Phe Glu Pro Val Glu Tyr Glu Asn Phe Leu Leu Val Asp 160
481 GGA GGT ATA GTG AAC AAC CTG CCC GTA GAA CCT TTG GAA AAG TTC AAA GAA CCC ATA ATC 540
161 Gly Gly Ile Val Asn Asn Leu Pro Val Glu Pro Leu Glu Lys Phe Lys Glu Pro Ile Ile 180
541 GGG GTA GAT GTG CTT CCC ATA ACT CAA GAA AGA AAG ATT AAA AAT ATA CTC CAC ATC CTT 600
181 Gly Val Asp Val Leu Pro Ile Thr Gln Glu Arg Lys Ile Lys Asn Ile Leu His Ile Leu 200
601 ATA AGG AGC TTC TTT CTG GCG GTT CGT TCC AAT TCG GAA AAG AGA AAG GAG TTC TGC AAC 660
201 Ile Arg Ser Phe Phe Leu Ala Val Arg Ser Asn Ser Glu Lys Arg Lys Glu Phe Cys Asn 220
661 GTA GTT ATA GAA CCT CCC CTT GAA GAG TTC TCT CCT CTG GAC GTA AAT AAG GCG GAC GAG 720
221 Val Val Ile Glu Pro Pro Leu Glu Glu Phe Ser Pro Leu Asp Val Asn Lys Ala Asp Glu 240
721 ATA TTC TGC GGG GAT ATG AGA GCA CTT TAA 750
241 Ile Phe Cys Gly Asp Met Arg Ala Leu End 250

FIG. 12A
***Teredinibacter* - 42L**

1 ATG CCA GCT AAT GAC TCA CCC ACG ATC GAC TTT AAT CCT CGC GGC ATT CTT CGC AAC GCT 60
1 Met Pro Ala Asn Asp Ser Pro Thr Ile Asp Phe Asn Pro Arg Gly Ile Leu Arg Asn Ala 20
61 CAC GCA CAG GTT ATT TTA GCG ACT TCC GGC TTG CGC AAA GCG TTT TTG AAA CGC ACG CAC 120
21 His Ala Gln Val Ile Leu Ala Thr Ser Gly Leu Arg Lys Ala Phe Leu Lys Arg Thr His 40
121 AAG AGC TAC CTC AGC ACT GCC CAA TGG CTG GAG CTC GAT GCC GGC AAC GGA GTT ACC TTG 180
41 Lys Ser Tyr Leu Ser Thr Ala Gln Trp Leu Glu Leu Asp Ala Gly Asn Gly Val Thr Leu 60
181 GCC GGA GAG CTT AAC ACA GCG CCT GCA ACT GCA TCC TCC TCC CAC CCG GCG CAC AAG AAC 240
61 Ala Gly Glu Leu Asn Thr Ala Pro Ala Thr Ala Ser Ser Ser His Pro Ala His Lys Asn 80
241 ACT CTG GTT ATT GTG CTG CAC GGC TGG GAA GGC TCC AGC CAG TCG GCC TAT GCG ACC TCC 300
81 Thr Leu Val Ile Val Leu His Gly Trp Glu Gly Ser Ser Gln Ser Ala Tyr Ala Thr Ser 100
301 GCT GGC AGC ACG CTT TTC GAC AAT GGG TTC GAC ACT TTT CGC CTT AAT TTT CGC GAT CAC 360
101 Ala Gly Ser Thr Leu Phe Asp Asn Gly Phe Asp Thr Phe Arg Leu Asn Phe Arg Asp His 120
361 GGC GAC ACC TAC CAC TTA AAC CGC GGC ATA TTT AAC TCA TCG CTG ATT GAC GAA GTA GTG 420
121 Gly Asp Thr Tyr His Leu Asn Arg Gly Ile Phe Asn Ser Ser Leu Ile Asp Glu Val Val 140
421 GGC GCA GTC AAA GCC ATC CAG CAG CAA ACC GAC TAC GAC AAG TAT TGC CTG ATG GGG TTC 480
141 Gly Ala Val Lys Ala Ile Gln Gln Thr Asp Tyr Asp Lys Tyr Cys Leu Met Gly Phe 160
481 TCA CTG GGT GGG AAC TTT GCC TTG CCG GTC GCG GTG CCG GAA CAG CAT CTC GCT AAA CCG 540
161 Ser Leu Gly Gly Asn Phe Ala Leu Arg Val Ala Val Arg Glu Gln His Leu Ala Lys Pro 180
541 CTA GCG GGC GTG CTC GCC GTA TGC CCG GTA CTC GAC CCC GCA CAC ACC ATG ATG GCC CTA 600
181 Leu Ala Gly Val Leu Ala Val Cys Pro Val Leu Asp Pro Ala His Thr Met Met Ala Leu 200
601 AAC CGA GGT GCG TTT TTC TAC GGC CCG TAT TTT GCG CAT AAA TGG AAG CGC TCG TTA ACC 660
201 Asn Arg Gly Ala Phe Phe Tyr Gly Arg Tyr Phe Ala His Lys Trp Lys Arg Ser Leu Thr 220
661 GCA AAA CTT GCA GCT TTC CCA GAC TAC AAA TAC GGC AAA CAT TTA AAA TCG ATA CAC ACG 720
221 Ala Lys Leu Ala Ala Phe Pro Asp Tyr Lys Tyr Gly Lys Asp Leu Lys Ser Ile His Thr 240

***Teredinibacter* - 42L**

961 CTG CAT AAA CCT AGT GCT GCC GAC AAA TAT GCG GTG AAA TTA TTT GGA GCC TGT TGA 1017
321 Leu His Lys Pro Ser Ala Ala Asp Lys Tyr Ala Val Lys Leu Phe Gly Ala Cys End 339

FIG. 13B
Archeogobius fulgidus VC16 - 16MC1

GGA Gly	GAA Glu	GAT Asp	TTC Phe	ATA Ile	AAG Lys	CAT His	GAA Gln	ATT Ile	CTA Leu	ACT Ile	TAC Tyr	CCC Pro	GTT Val	GTG Val	AAC Asn
TTT Phe	GTA Val	GCC Ala	CCC Pro	ACA Thr	CCA Pro	TCG Ser	CTT Leu	CTG Leu	GAG Glu	TTT Phe	GGA Gly	GAG Glu	GGG Gly	CTG Leu	TGG Trp
ATT Ile	CTC Leu	GAC Asp	CAG Gln	AAG Lys	ATA Ile	ATG Met	AGT Ser	TGG Trp	TTC Phe	TCG Ser	GAG Glu	CAG Gln	TAC Tyr	TTC Phe	TCC Ser
AGA Arg	GAG Glu	GAA Glu	GAT Aso	AAG Lys	TTT Phe	AAG Asn	CCC Pro	CTC Leu	GCC Ala	TCC Ser	GTA Val	ATC Ile	TTT Phe	GCG Ala	GAC Asp
CTT Leu	GAG Glu	AAC Asn	CTA Leu	CCT Pro	CCT Pro	GTG Ala	CTG Leu	ATC Ile	ATA Ile	ACC Thr	GCC Ala	GAA Glu	TAC Tyr	GAC Asp	CCG Pro
CTG Leu	AGA Arg	GAT Asp	GAA Glu	GGA Gly	GAA Glu	GTT Val	TTC Phe	GGG Gly	CAG Gln	ATG Met	CTG Leu	AGA Arg	AGA Arg	GCC Ala	GGT Gly
GTT Val	GAG Glu	GCG Ala	AGC Ser	ATC Ile	GTC Val	AGA Arg	TAC Tyr	AGA Arg	GGC Gly	GTG Val	CTT Leu	CAC His	GGA Gly	TTC Phe	ATC Ile
AAT Asn	TAC Tyr	TAT Tyr	CCC Pro	GTG Val	CTG Leu	AAG Lys	GCT Ala	GCG Ala	AGG Arg	GAT Asp	GCG Ala	ATA Ile	AAC Asn	CAG Gln	ATT Ile
GCC Ala	GCT Ala	CTT Leu	CTT Ile	GTG Val	TTC Phe	GAC Asp	TAG								

ATG Met	CCC Pro	CTA Leu	GAT Asp	CCT Pro	AGA Arg	ATT Ile	AAA Lys	AAG Lys	TTA Leu	CTA Leu	GAA Ser	TCA Ala	GCT Leu	CTT Leu	ACT Thr
1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
ATA Ile	CCA Pro	ATT Ile	GGT Gly	AAA Lys	GCC Ala	CCA Pro	GTA Val	GAA Glu	GAG Glu	GTA Val	AGA Lys	ATA Ile	TTT Phe	AGG Arg	1
CAA Gln	TTA Leu	GCG Ala	TCG Ser	GCA Ala	GCT Ala	CCC Pro	AAA Lys	GTC Val	GAA Glu	GTT Val	AAA Lys	GTA Val	GAA Glu	GAT Asp	2
ATA Ile	AAA Lys	ATA Ile	CCA Pro	GCC Gly	AGT Ser	GAA Glu	ACC Thr	GTT Val	ATA Ile	AAC Asn	AGA Arg	GTG Val	TAT Tyr	TTT Phe	3
CCG Pro	AAG Lys	AGT Ser	AGC Ser	GGT Gly	CCT Pro	TAT Tyr	GGT Gly	GTT Val	CTA Leu	GTG Val	TAT Tyr	CTT Leu	CAT His	GGA Gly	4
GGT Gly	TTT Phe	GTA Val	ATA Ile	GCC Gly	GAT Asp	GTG Val	GAA Glu	TCT Ser	TAT Tyr	GAC Asp	CCA Pro	TTA Leu	TGT Cys	AGA Arg	5
ATT Ile	ACA Thr	AAT Asn	GCG Ala	TGC Cys	AAT Asn	TGC Cys	GTT Val	GTA Val	GTA Val	TCA Ser	GTG Val	GAC Asp	TAT Tyr	AGG Arg	6
GCT Ala	CCA Pro	GAA Glu	TAC Tyr	AAG Lys	TTT Phe	CCT Pro	TCT Ser	GCA Ala	GTT Val	ATC Ile	GAT Asp	TCA Ser	TTT Phe	GAC Asp	7
ACT Thr	AAT Asn	TGG Trp	GTT Val	TAT Tyr	AAC Asn	AAT Asn	TTA Leu	GAT Asp	AAA Lys	TTT Phe	GAT Asp	GGA Gly	AAG Lys	ATG Met	8
GTT Val	GCG Ala	ATT Ile	GCG Ala	GGA Gly	GAT Asp	AGT Ser	GCT Ala	GGA Gly	GGA Gly	AAT Asn	TTG Leu	GCA Ala	GCG Ala	GTT Val	9
145	130	115	100	85	70	55	40	25	10	5	15	30	45	60	160

FIG. 14B
Sulfolobus solfataricus P1 8LC1

GCT CTT CTT TCA AAG GGT AAA ATT AAT TTG AAG TAT CAA ATA CTG GTT
Ala Leu Leu Ser Lys Gly Lys Ile Asn Leu Lys Tyr Gln Ile Leu Val
165 170 175

TAC CCA GCG GTA AGT TTA GAT AAC GTT TCA AGA TCC ATG ATA GAG TAC
Tyr Pro Ala Val Ser Leu Asp Asn Val Ser Arg Ser Met Ile Glu Tyr
180 185 190

TCT GAT GGG TTC Phe Phe CTT ACC AGA GAG CAT ATA GAG TGG TTC GGT TCT
Ser Asp Gly Phe Phe Leu Thr Arg Glu His Ile Glu Trp Phe Gly Ser
195 200 205

CAA TAC TTA CGA AGC CCT GCA GAT TTG CTA GAC TTT AGG TTC TCT CCA
Gln Tyr Leu Arg Ser Pro Ala Asp Leu Leu Asp Phe Arg Phe Ser Pro
210 215 220

ATT CTG GCG CAA GAT TTC AAC GGA TTA CCT CCA GCC TTC ATA ATA ACA
Ile Leu Ala Gln Asp Phe Asn Gly Leu Leu Pro Pro Ala Ala Ile Ile Thr
225 230 235

GCA GAA TAC GAT CCA AGG GAT CAA GCA GAA GCG TAT TAT GCA AAT AAA
Ala Glu Tyr Asp Pro Leu Arg Asp Gln Gln Gly Glu Ala Tyr Ala Asn Lys
240 245 250 255

CTA CTA CAA GCT GGA GTC TCA Ser Val Thr ACT AGT GTG AGA Phe AAC Asn Val
Leu Leu Gln Ala Gly Val Ser Thr Thr Ser Val Arg Phe Asn Asn Val
260 265 270 275

ATA CAC GGA TTC Phe CTC TCA TTC Phe Phe CCG Pro Leu Met Glu CAA GGA AGA GAT
Ile His Gly Phe Leu Ser Phe Phe Thr Leu Met Glu Gln Gly Arg Asp
280 285 290 295

GCT ATA GGT CTG ATA GGG TCT GTG TTA AGA CGA GTA TTT Phe TAT GAT AAA
Ala Ile Gly Lys Ile Ile Ile Gly Ser Val Leu Arg Arg Val Tyr Asp Lys
300 305